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AGRICULTURAL MEMORANDUM NO. 407

# Chances of return-to-capacity dates using September, October and November data

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Using 1940-1959 data and following the methods of Ag Mem 365 and 368, the following contingency tables were evaluated.

## Chances (out of 100) of return to capacity before Oct 31

| End of September Deficit | Average Annual Rainfall 20 | 22 | 24 | 26 | 28 | 30 |
|---|---|---|---|---|---|---|
| 0.5 | 70 | 72 | 74 | 76 | 80 | 84 |
| 1.0 | 44 | 46 | 49 | 52 | 57 | 63 |
| 1.5 | 25 | 27 | 29 | 33 | 40 | 49 |
| 2.0 | 6 | 8 | 12 | 18 | 27 | 40 |
| 2.5 | 1 | 1 | 3 | 10 | 21 | 34 |
| 3.0 | 1 | 1 | 2 | 7 | 16 | 29 |
| 3.5 | 1 | 1 | 1 | 5 | 12 | 23 |
| 4.0 | 1 | 1 | 1 | 4 | 9 | 17 |
| 4.5 | 1 | 1 | 1 | 3 | 7 | 11 |

With large deficits the chances of return during October seem very low. This may be due to the 20 year selection containing a high proportion of relatively dry Octobers - alternatively it may be due to low rainfall Octobers tending to follow dry summers.

In either case a coincidence may have occurred which would suggest that these odds are too low for confident extrapolation and especially if future Octobers return to the older pattern of the wettest months of the year.

## Chances of return to capacity before November 30

| End of October Deficit | Average Annual Rainfall 20 | 22 | 24 | 26 | 28 | 30 |
|---|---|---|---|---|---|---|
| 0.5 | 88 | 88 | 89 | 89 | 90 | 91 |
| 1.0 | 75 | 75 | 75 | 75 | 76 | 77 |
| 1.5 | 63 | 63 | 64 | 64 | 65 | 70 |
| 2.0 | 48 | 50 | 52 | 54 | 57 | 64 |
| 2.5 | 39 | 40 | 41 | 43 | 48 | 54 |
| 3.0 | 28 | 29 | 30 | 32 | 36 | 41 |
| 3.5 | 22 | 22 | 22 | 22 | 24 | 28 |
| 4.0 | 17 | 17 | 17 | 17 | 17 | 17 |
| 4.5 | 10 | 10 | 10 | 10 | 10 | 10 |

These chances are much higher than those for October. This is due to the high proportion of wet Novembers in the sample. Further years may not

/repeat

repeat this climate, so the above chances are liable to be too high.

Chances of return to capacity before December 31

| End of November Deficit | Average Annual Rainfall 20 | 22 | 24 | 26 | 28 | 30 |
|---|---|---|---|---|---|---|
| 0.5 | 99 | 99 | 99 | 99 | 99 | 99 |
| 1.0 | 82 | 84 | 86 | 90 | 94 | 98 |
| 1.5 | 63 | 69 | 75 | 81 | 87 | 93 |
| 2.0 | 35 | 46 | 57 | 66 | 74 | 82 |
| 2.5 | 15 | 26 | 36 | 46 | 57 | 66 |
| 3.0 | 2 | 11 | 20 | 28 | 36 | 42 |
| 3.5 | 1 | 4 | 10 | 16 | 22 | 30 |
| 4.0 | 1 | 1 | 5 | 9 | 13 | 20 |

Any comments or suggestions on this paper should be referred to the author.

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